

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A DC-DC converter comprising:

a transformer having primary side terminals, secondary side terminals, a primary side winding, and a secondary side winding and determining a voltage converting ratio;

a pair of switching means which is interposed between said primary side terminals and said primary side winding,

a LC resonant circuit comprised of a resonating reactor connected in series with said ~~pair of switching means~~ primary side winding of said transformer, and a resonating capacitor that resonates with said resonating reactor; and

a driving means for alternately turning said pair of switching means ON/OFF, wherein:

a resonant current detecting means for detecting a resonant current caused by an operation of said LC resonant circuit and means for feeding a detected output of said resonant current detecting means back to said driving means are provided; and

said driving means drives said pair of switching means by correcting their on-state lapses of time so that their on-state resonant currents may be nearly equal to each other based on the detected output of said resonant current detecting means.

Claim 2 (Original): The DC-DC converter according to claim 1, wherein said resonant current detecting means is provided on the primary side of said transformer.

Claim 3 (Currently Amended): A bi-directional DC-DC converter comprising:
a transformer having low-voltage side terminals, high-voltage side terminals, a low-voltage side winding, and a high-voltage side winding and determining a voltage converting ratio;
a low-voltage side pair of switching means interposed between said low-voltage side terminals and said low-voltage side winding;
a high-voltage side pair of switching means interposed between said high-voltage side terminals and said high-voltage side winding;
a low-voltage side rectifying element connected in parallel with each of switching elements in said low-voltage side pair of switching means;
a high-voltage side rectifying element connected in parallel with each of switching elements in said high-voltage side pair of switching means; and
a driving means for turning ON/OFF the switching elements in said low-voltage side pair of switching means and the switching elements in said high-voltage side pair of switching means, wherein:
a LC resonant circuit is interposed between said high-voltage side winding and said high-voltage side pair of switching means ~~or between said low-voltage side winding and said low-voltage side pair of switching means;~~
a resonant current detecting means for detecting a resonant current caused by an operation of said LC resonant circuit and means for feeding a detected output of said resonant current detecting means back to said driving means are provided; and
said driving means drives said low-voltage side pair of switching means or said high-voltage side pair of switching means by correcting their on-state lapses of time so that their on-

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state resonant currents may be nearly equal to each other based on the detected output of said resonant current detecting means.

Claim 4 (Cancelled).

Claim 5 (Original): The DC-DC converter according to claim 3, wherein said low-voltage side pair of switching means and said high-voltage pair of switching means are each configured by interconnecting four switching elements in a bridge.